

IN THE CLAIMS:

Please cancel claims 1-32.

Kindly add claims 33-64 to this patent application:

33. A filtering face mask that comprises:

- (a) a mask body adapted to fit over the nose and mouth of a person; and
- (b) an exhalation valve that is attached to the mask body, which exhalation

valve comprises:

(1) a valve seat that comprises an orifice and a seal surface, the orifice allowing exhaled air to pass therethrough and being surrounded by the seal surface; and

(2) a single flexible flap non-centrally and operatively supported relative to the orifice of the valve seat and pressed against the seal surface of the valve seat in a closed state of the exhalation valve, the flexible flap assuming, in its closed state, a curved profile in a cross-sectional view thereof, the curved profile comprising a curve that extends from a first point where a first stationary portion of the flexible flap is secured to the valve seat to a second point where a second free portion of the flexible flap contacts the seal surface, the flexible flap being held in its closed state, at least in part, by virtue of the curved profile thereof;

wherein the second free portion of the flexible flap represents the only free portion of the flap and can flex so as to permit exhaled air to pass through the orifice and to provide an open state of the exhalation valve such that the second free portion of the flexible flap is out of contact with the seal surface at the second point while the first portion of the flexible flap remains stationary at the first point.

34. The filtering face mask of claim 33, wherein the valve seat includes one or more cross members that are disposed within the orifice.

35. The filtering face mask of claim 34, wherein the valve seat further includes a flap retaining surface that is located within an internal chamber defined by a valve cover.

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36. The filtering face mask of claim 35, wherein the first stationary portion of the flexible flap is held between a flap retaining surface on the valve seat and a second member that is associated with the valve cover.

37. The filtering face mask of claim 36, wherein the flexible flap is secured to the valve by mechanical clamping.

38. The filtering face mask of claim 36, wherein the flexible flap can assume a curved profile, when in its closed state, that extends in from where the flexible flap contacts the second member of the valve cover to where the second portion of the flexible flap contacts the seal surface of the valve seat.

39. The filtering face mask of claim 36, wherein the flap retaining surface is oriented transversely relative to the orifice.

40. The filtering face mask of claim 39, wherein the flap retaining surface is positioned adjacent one side of the orifice.

41. The filtering face mask of claim 37, wherein the flexible flap would normally exhibit a flat configuration but is curved by virtue of the securement of the flap to the valve seat and the relative positioning and alignment between the seal surface and the flap retaining surface.

42. The filtering face mask of claim 35, wherein the flexible flap would normally exhibit a flat configuration but is curved by virtue of the securement of the flap to the valve seat and the relative positioning and alignment between the seal surface and the flap retaining surface.

43. The filtering face mask of claim 33, wherein the valve seat includes a flange portion that defines a mounting surface for the valve seat, which mounting surface extends 360° around the valve seat at its base and enables the valve seat to be secured to the mask body.

Sub 63 7 44. The filtering face mask of claim 33, wherein the shape of the orifice does not correspond fully to the shape of the seal surface, and wherein the flexible flap is mounted to the valve seat in cantilever fashion.

45. The filtering face mask of claim 33, wherein the exhalation valve also includes a valve cover, the flexible flap being held in position between the valve seat and the valve cover by mechanical clamping.

Sub 64 7 46. The filtering face mask of claim 33, wherein the curvature of the flexible flap extends not only from the first and second points but also from a third point that is located at where the flexible flap contacts a location on the seal surface opposite the second point.

47. The filtering face mask of claim 33, wherein the valve seat comprises cross members that are disposed within the orifice to define a plurality of openings through which exhaled air can pass during an exhalation to lift the free portion of the flap from the seal surface.

48. The filtering face mask of claim 47, wherein the valve seat includes cross members that are disposed within the orifice and are recessed beneath the seal surface.

Sub 65 7 49. The filtering face mask of claim 33, wherein the valve seat includes a flap-retaining surface that is spaced from the orifice at about 1 to 3.5 millimeters.

50. The filtering face mask of claim 33, wherein the valve seat is made from a relatively light-weight plastic that is molded into an integral one-piece body.

51. The filtering face mask of claim 33, wherein the seal surface is substantially uniformly smooth to insure that a good seal occurs between the single flexible flap and the seal surface, and wherein the flexible flap is made from a material that is capable of allowing the flap to display a bias towards the seal surface.

52. The filtering face mask of claim 33, wherein the flexible flap has a stress relaxation sufficient to keep the flexible flap in an abutting relationship to the seal surface under any static orientation for 24 hours at 70 °C.

53. The filtering face mask of claim 33, wherein the flexible flap is made from a crosslinked polyisoprene.

54. The filtering face mask of claim 33, wherein the flexible flap has a Shore A hardness of about 30 to 50 and has a generally uniform thickness of about 0.2 to 0.8 millimeters.

55. The filtering face mask of claim 33, wherein the second free portion of the flexible flap has a profile that when viewed from the front corresponds to the general shape of the seal surface and comprises a curve.

56. The filtering face mask of claim 33, wherein the flexible flap is 1.2 to 3 centimeters wide and is about 1 to 4 centimeters long.

57. The filtering face mask of claim 33, wherein the flexible flap has a peripheral edge that includes a stationary segment that represents about 10 to 25 percent of the total circumferential edge of the flexible flap, with the remaining 75 to 90 percent of the peripheral edge being free to be lifted from the seal surface.

58. The filtering face mask of claim 33, wherein the flexible flap is positioned on the valve such that exhaled air is deflected downward during an exhalation when the filtering face mask is worn on a person.

59. The filtering face mask of claim 33, wherein the mask body is cup-shaped and includes a filtering material and a shaping layer for providing structure to the mask.

60. The filtering face mask of claim 59, wherein the shaping layer is located outside of the filtration layer on the mask body.

61. The filtering face mask of claim 60, wherein at least 60 percent of the total airflow flows through the exhalation valve under a normal exhalation test.

62. The filtering face mask of claim 33, wherein at least 73 percent of the total airflow flows through the exhalation valve under a normal exhalation test.

63. The filtering face mask of claim 63, wherein the exhalation valve is positioned on the mask body substantially opposite to a wearer's mouth.

Sub 62/64. The filtering face mask of claim 33, wherein the exhalation valve is positioned on the mask body such that the second free portion of the flexible flap resides beneath the stationary portion when the mask is worn on a person.

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